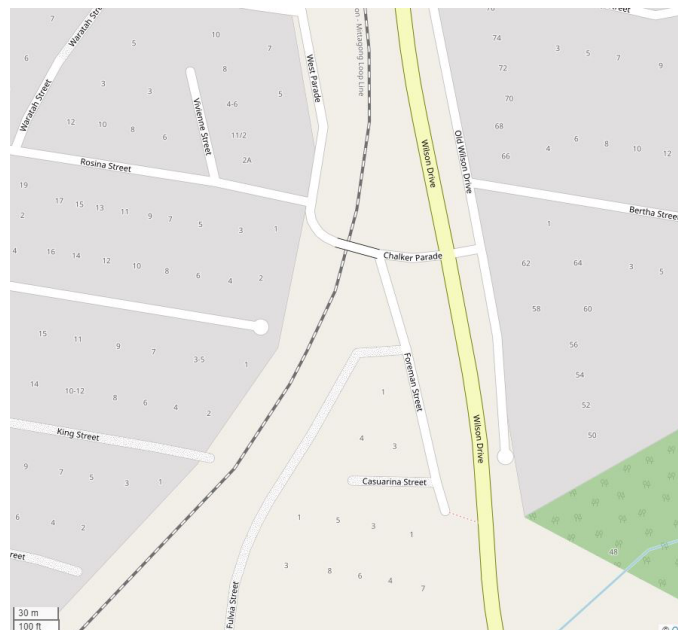


**PROPOSAL TO NOMINATE AS ITEM OF ENGINEERING HERITAGE INTEREST**  
**Chalker Parade Railway Overbridge. Hill Top, NSW**



*NJ Simons 28 June 1975*

<b>Name:</b>	Chalker Parade Overbridge.
<b>Other/Former Names:</b>	Hill Top bridge.
<b>Location:</b>	Hill Top, NSW.
<b>Address:</b>	Chalker Parade between West Parade and Wilson Drive

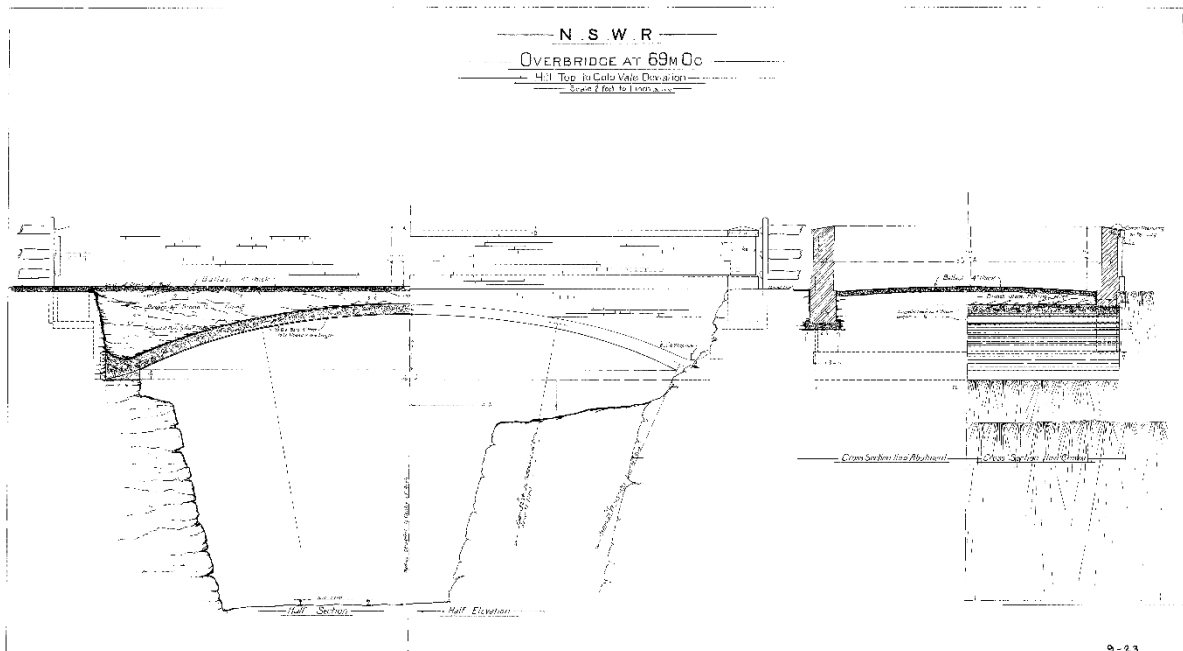


<b>Nominated by:</b>	Bill Phippen
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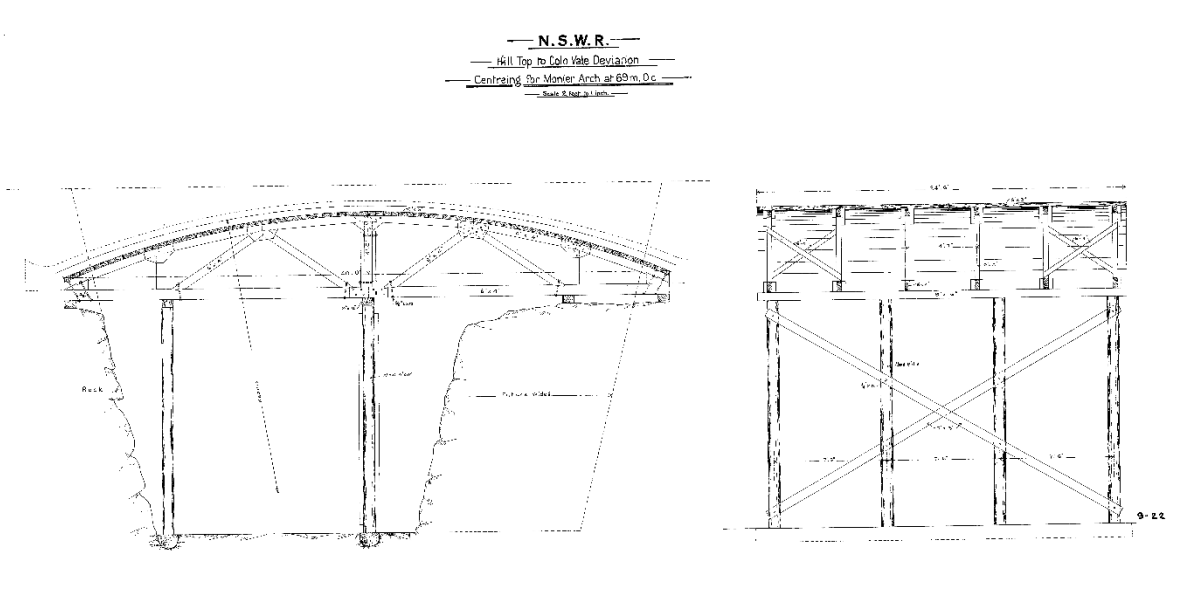
<b>Contact:</b>	0412379236	billhippen@telstra.com	
<b>EHA Group:</b>	Engineering Heritage Sydney		
<b>Significance:</b>	The first reinforced concrete road bridge in NSW.		
<b>Current Owner:</b>	Transport Asset Holding Entity, NSW.		
<b>Current use:</b>	Railway overbridge / Road bridge over rail		
<b>Former use:</b>	Railway overbridge / Road bridge over rail		
<b>Proposed use:</b>	Railway overbridge / Road bridge over rail		
<b>Designer:</b>	New South Wales Railways		
<b>Builder:</b>	New South Wales Railways		
<b>Started:</b>	1897	<b>Completed:</b>	1898
<b>History:</b>	<p>The original (1867) railway from Sydney to all places south and ultimately Victoria climbed the Bargo Ramp into the Southern Highlands along the ridge between the Bargo and Nattai Rivers. Although Hill Top, as the name suggests, was the summit of a significant and steep climb, the railway continued on a more or less direct route, descending to cross the valley of Ropesend Creek then rising again to reach Colo Vale.</p> <p>Traffic grew to the extent that, by 1897, improvements to the line were required and a deviation, heading the catchment of the creek, between Hill Top and Colo Vale replaced the original line, leaving Hill Top through a deep rock cutting. To maintain access to the town from the main road which followed the railway for much of its route, now called Wilson Drive, a road bridge was built over the cutting, carrying Chalker Parade and/or West Parade.</p> <p>The 1867 railway was of single track, as was the deviation, though the intention was apparently to later upgrade to double track, and to this end a minor underbridge immediately south of the town was built with wide brick abutments and the Chalker Parade bridge long enough to span the future two tracks, though the rock cutting has never been fully excavated beyond a single track.</p> <p>The new railway alignment was open before the bridge was completed so the falsework was made with a clear space for the trains to pass.</p> <p>The structure is a very shallow concrete arch (1.2m rise in 12m span) and is a thin (200mm) slab of near uniform thickness, only slightly deeper at the abutments. As such the line of action of thrust in the arch would not remain within the section during all loading conditions so iron or steel bars were provided at each face of the arch slab, with transverse bars also provided. These bars were relatively small at 10mm and 6mm.</p>		

	<p>This was the first use of this Monier technique of reinforcing concrete by an array of metal bars as a road bridge in New South Wales. The sewer bridges at Whites Creek and Johnstons Creek in Sydney had been built only the year before and while these may have demonstrated the technique, their load was uniform and more or less constant. Chalker Parade, with the possibility of a heavy rolling wagon or traction engine crossing, was a more challenging proposition.</p> <p>The design and the construction are apparently sound. Superficial inspection would suggest that the bridge is in excellent condition and there is no posted weight limit.</p> <p>The 1897 intention to retain the route as the Main Southern Line and to duplicate it was not maintained. A total deviation from Picton to Mittagong, following a ridge on the opposite side of the Bargo River and with several tunnels, deep cuttings and meandering loops was opened in 1919. It does include several concrete arch overbridges, but they are not as shallow, and some doubt exists as to whether they are steel reinforced at all. The older line, re-named the Loop Line, was retained for local traffic and as an emergency bypass until 1978, when it was closed and functionally abandoned past Buxton, nearer to Sydney.</p> <p>The Rail Transport Museum (now Transport Heritage NSW) was established at Thirlmere in 1976 and the Loop Line used for tourist shuttle services, but only as far as Buxton. Currently work is underway to rebuild the track between Buxton and Colo Vale and it is thus intended that museum trains will travel under the Chalker Parade bridge.</p> <p>Close to this overbridge are other items of engineering interest. The old railway route from Hill Top to Colo Vale was reworked as the through road for motor traffic and is noticeably unusual in that it follows a constant grade, cutting through higher ridges with large fills across gullies. North of Hill Top, closer to Sydney, on the climb from Balmoral the route cuts through Big Hill in a remarkably deep cutting which is crossed at its highest point by the Wilson Drive bridge. It is widely stated that this is the deepest cutting on the NSW railways and while this is technically not correct, the cutting is very narrow and quite spectacular, especially for 1866.</p>
<b>Interpretation Themes:</b>	Transport – Rail, River and Road Engineering and Technology
<b>Description:</b>	The bridge is a concrete arch of shallow rise of 4 feet (1.2m) reinforced longitudinally near both faces with $\frac{3}{8}$ " (10mm) plain bars at 4" (100mm) pitch, and with transverse bars of $\frac{1}{4}$ " (6mm) diameter also at 4" (100mm) centres. The upper reinforcement does not

	<p>extend to the crown of the arch. The arch ring is 8" (200mm) thick at the crown, slightly increased towards the abutments. The clear width of the superimposed road is 20 feet (6.1m)</p> <p>It has a nominal span of 40 feet (12.2m). The arch is surmounted with brick spandrel walls and parapets retaining broken stone filling. The arch spans a deep cutting with the arch bearing against strong undisturbed rock.</p>
<b>Condition:</b>	Excellent, trafficable without any signposted limit
<b>Heritage Listing:</b>	None
<b>Heritage significance</b>	The bridge is one of the first uses of reinforced concrete in Australia, the first use of the technology for a road bridge and the first use of reinforced concrete by the NSW Railways.



Original NSW Rail Plans 6 April 1897



*Centring for erection of Monier arch.*



*Chalker Parade Bridge. Jack Smith. 30 January 2016.*